

The ST3 Mission and its Capabilities for Be Star Observations

R. Linfield

IPAC/Caltech

The ST3 mission will perform visible wavelength (450–900 nm) interferometry on baselines of 40 m–200 m, using two spacecraft in heliocentric orbit. Launch is scheduled for 2003. Approximately 100 stars can be observed during the nominal 4–5 month interferometry phase of the mission. Sufficient u - v coverage can be obtained for simple measurements of the two-dimensional structure of target stars.

The nominal observing mode will involve tracking the white light fringe with half of the combined light, and dispersing the other half to allow measurements of the visibility amplitude in 80 spectral channels of ~ 4000 km/s width. The design capability for this mode is a detection limit of $m_v = 8$ for a stellar visibility of 0.3. In order to obtain the much finer velocity resolution desired for Be stars, the instrument can be operated in a Fourier Transform Spectrometer mode, taking advantage of the very long coherence times in space. By sweeping the delay line back and forth over a span of 2000–3000 μm , a velocity resolution of < 100 km/s should be possible. This will allow the Be star circumstellar disks to be resolved both spatially and in velocity. The magnitude limit for this type of measurement will be $m_v \approx 5$.

Abstract for IAU Colloquium 175

"The Be Phenomenon in Early-Type Stars"

Alicante, Spain

June 28 - July 2, 1999